

Advancements in international benchmarking, predictive forecasts and data quality

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Introduction

Predictive analytics is revolutionising healthcare. Breakthroughs in generative AI have significantly reduced the time to deliver high-quality forecast models. Hospitals and healthcare providers can leverage these insights to anticipate patient deterioration, optimise staffing, reduce readmission rates, and improve operational efficiency.

Health Roundtable is a members group of around 180 hospitals across Australia and New Zealand who share their clinical coded data for benchmarking and improvement activities. A recent enhancement to the Health Roundtable data analytics and benchmarking platform, brought predictive forecasts to key safety and quality indicators in 2025.

Methods

In phase 1, Beamtree has developed 11 distinct models that drive the initial high-level forecasts across all 188 hospitals. This approach shares the same foundation behind advanced AI systems like ChatGPT and Gemini. First, the model is trained on broad trends and seasonal patterns derived from five years of historical data across all HRT hospitals. It is then fine-tuned to incorporate each hospital's unique characteristics, ensuring forecasts capture local nuances. Finally, indicators that exhibit similar behaviours are grouped together, with a specialised model created for each group to provide more accurate, context-specific predictions.

Results

Predictive forecasts combined with benchmarking provide a comprehensive overview of the current state of healthcare and future trend assessment, providing the general direction an indicator will fall without any intervention.

Predictions can be readily used in three ways. Firstly, to draw focus on emerging safety and quality issues; whereas traditional benchmarking approaches exclusively identify retrospective issues. Secondly, to set targets for new safety and quality improvement initiatives; beating set targets gives statistical confidence of an initiative's efficacy. Finally, forecasts can be used to scenario test emerging safety and quality strategies, to ensure robustness towards likely future states.

Result Graphs will be provided in presentation

Discussion

The advancement of predictive forecasts plays a vital role in improving data utility. Health service planners can now interpret key future trends. This proactive approach not only improves patient outcomes but also reduces future costs and enhances the quality of care, by more readily identifying emerging issues. As data-driven healthcare continues to evolve, predictive analytics is becoming an essential tool for informed decision-making and better patient management and future planning.

Topics: Innovations in case-mix, data and technology.

Key Words: Clinical Coding, Benchmarking, Data Analytics, Predictive Analytics, AI

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